

REMARKS

Reconsideration of the above-identified patent application in view of the present amendment and the following remarks is respectfully requested.

This amendment cancels claims 1-3, 5, 6, and 8-14. Claims 4 and 7 were previously cancelled. This amendment also adds new claims 15-25.

New claim 15 recites an apparatus comprising a hydraulic fluid operated automatic transmission for transmitting motive power from an engine of a vehicle to drive wheels of the vehicle. The apparatus also comprises a hydraulic fluid power assisted steering gear for effecting steering movement of steerable wheels of the vehicle. The steering gear includes a fluid motor. A body of hydraulic fluid is provided for operating both of the automatic transmission and the steering gear. A reservoir stores a portion of the hydraulic fluid. A transmission fluid pump is connected with the reservoir for pumping hydraulic fluid between the reservoir and the automatic transmission at a relatively low pressure. A power steering pump is connected with the reservoir, and is separate from the transmission fluid pump, for pumping hydraulic fluid between the reservoir and the fluid motor at a relatively high pressure. The apparatus further includes a cooler for cooling hydraulic fluid. The transmission fluid pump is operative to pump hydraulic fluid between the reservoir and the cooler.

New claim 15 patentably defines over a combination of Borman, U.S. Patent No. 3,789,865, Luibrand, U.S. Patent No.

5,505,276, Bullard et al., U.S. Patent No. 3,886,814, and Yamaguchi, U.S. Patent No. 4,835,968, for at least the following reasons:

1. **None of the references teaches or suggests a transmission fluid pump and a power steering pump connected to a common reservoir.** Borman teaches a single pump 42 for pumping fluid between a reservoir 10 and a fluid system 46. Luibrand teaches a single pump 12 for pumping fluid from a reservoir 16 to a power steering motor 24. Bullard et al. teaches a single pump 98 for pumping fluid from a sump 96 to a transmission 10. Yamaguchi teaches two hydraulic pumps P_1 and P_2 , one pump P_1 for pumping fluid through a booster hydraulic circuit and another pump P_2 for pumping fluid to a cargo-steering hydraulic circuit. None of the references teaches or suggests a transmission fluid pump and a power steering pump connected to a common reservoir. Thus, for this reason, allowance of claim 15 is respectfully requested.

2. **No teaching or suggestion to modify Borman to include both a transmission fluid pump and a power steering pump.** In rejecting previous claim 2, the Office Action suggests that it would be obvious to one of ordinary skill in the art to modify Borman to include both a transmission fluid pump and a power steering pump. It is respectfully suggested that there is no teaching or suggestion in any of the references as to how Borman would be modified. Furthermore, such a modification of Borman is not obvious to one of ordinary skill in the art. Borman includes a valve 18 for directing fluid to a secondary reservoir 40 when the fluid

level of a primary reservoir 10 reaches a predetermined level. The valve 18 is responsive to fluid pressure in chamber 24 for controlling fluid flow to the secondary chamber 40. As set forth in claim 15, the transmission fluid pump and the power steering pump operate to supply fluid at different pressures. None of the references teach or suggest how the valve 18 of Borman would be modified to handle fluid supplied at different pressures from two different pumps. Therefore, for this further reason, allowance of claim 15 is respectfully requested.

3. None of the references teaches or suggests a cooler for cooling hydraulic fluid that is used for operating both an automatic transmission and a power steering motor. The Office Action relies upon the heat exchanger 90 of Bullard et al. for a teaching of a cooler. However, the heat exchanger 90 of Bullard et al. fails to cool hydraulic fluid that is used to operate both an automatic transmission and a power steering motor. The heat exchanger 90 of Bullard et al. only cools hydraulic fluid used for an automatic transmission. None of the references teaches or suggest a cooler for cooling hydraulic fluid that is used for operating both an automatic transmission and a power steering motor. Thus, for this additional reason, allowance of claim 15 is respectfully requested.

Claims 16-18 depend from claim 15 and are allowable for at least the same reasons as claim 15. Additionally, claims 16-18 are allowable for the specific limitations of each claim.

Specifically, claim 17 recites a filter for filtering the hydraulic fluid between the reservoir and the transmission fluid pump and between the reservoir and the power steering pump. None of the references teach or suggest a filter that filters hydraulic fluid between a reservoir and a transmission fluid pump and between the reservoir and a power steering pump. The suction filter S/F of Yamaguchi fails to filter hydraulic fluid between a reservoir and a transmission fluid pump. Therefore, allowance of claim 17 is respectfully requested.

New claim 19 recites an apparatus comprising a hydraulic fluid operated automatic transmission for transmitting motive power from an engine of a vehicle to drive wheels of the vehicle. The apparatus also comprises a hydraulic fluid power assisted steering gear for effecting steering movement of steerable wheels of the vehicle. The steering gear includes a fluid motor. A body of hydraulic fluid is provided for operating both of the automatic transmission and the steering gear. A reservoir stores a portion of the hydraulic fluid. A power steering pump is connected with the reservoir for pumping hydraulic fluid between the reservoir and the automatic transmission and the fluid motor. The power steering pump is operable for providing hydraulic fluid at a pressure high enough to operate the power steering gear. A cooler cools the hydraulic fluid. The cooler is located downstream of the power steering pump. The apparatus further comprises a pressure reducer located downstream of the power steering pump and upstream of the automatic transmission for

receiving hydraulic fluid from the power steering pump and for reducing the pressure of the hydraulic fluid provided to the automatic transmission.

New claim 19 patentably defines over a combination of Borman, Luibrand, Bullard et al., Yamaguchi, and Hayabuchi et al., U.S. Patent No. 5,547,436 for at least the following reasons:

1. None of the references teaches or suggests a pressure reducer located downstream of a power steering pump and upstream of an automatic transmission for receiving hydraulic fluid from the power steering pump and for reducing the pressure of the hydraulic fluid provided to the automatic transmission. Hayabuchi et al. teaches first and second pressure reducing means 943 and 944 for reducing fluid pressure supplied to a hydraulic servo 91 for operating a clutch C of an automatic transmission. Hayabuchi et al. also teaches a pressure source 54 that supplies fluid at a pressure sufficient for operating other portions of the automatic transmission. (Col. 8, lines 21-32). There is no teaching or suggestion in Hayabuchi et al. for the pressure source 54 to be a power steering pump. Thus, for this reason, allowance of claim 19 is respectfully requested.

2. One of ordinary skill in the art would not modify Borman to include the pressure reducing means 943 and 944 of Hayabuchi et al. In rejecting previous claim 14, the Office Action suggests that it would have been obvious for one of ordinary skill in the art to modify Borman to include a pressure reducer from Hayabuchi et al. It is respectfully

suggested that there is no teaching or suggestion in any of the references for such a modification of Borman. The pressure reducing means 943 and 944 of Hayabuchi et al. reduce the fluid pressure from a level used to operate the other portions of the automatic transmission to a lower level for operating a clutch C of the automatic transmission. Thus, any modification of Borman to include the pressure reducing means 943 and 944 of Hayabuchi et al. would require additional structure for reducing the fluid pressure to a level necessary for operating the other portions of the automatic transmission prior to the pressure reducing means lowering the pressure for operation of the clutch C. Thus, given the teachings of Hayabuchi et al., one of ordinary skill in the art would not be motivated to modify Borman to include the pressure reducing means. Thus, for this further reason, allowance of claim 19 is respectfully requested.

3. None of the references teaches or suggests a cooler for cooling hydraulic fluid that is used for operating both an automatic transmission and a power steering motor. The Office Action relies upon the heat exchanger 90 of Bullard et al. for a teaching of a cooler. However, the heat exchanger 90 of Bullard et al. fails to cool hydraulic fluid that is used to operate both an automatic transmission and a power steering motor. The heat exchanger 90 of Bullard et al. only cools hydraulic fluid used for an automatic transmission. None of the references teaches or suggest a cooler for cooling hydraulic fluid that is used for operating both an automatic transmission and a power steering motor. Thus, for this

additional reason, allowance of claim 19 is respectfully requested.

4. None of the references teaches or suggests a cooler located downstream of a power steering pump. The heat exchanger 90 of Bullard et al. is located downstream of an automatic transmission pump. None of the references teaches or suggests a cooler that is located downstream of a power steering pump. Therefore, allowance of claim 19 is respectfully requested.

Claims 20 and 21 depend on claim 19 and are allowable for at least the same reasons as claim 19. Additionally, claims 20 and 21 are allowable for the specific limitations of each claim.

Specifically, claim 20 recites a filter for filtering hydraulic fluid. The filter filters the hydraulic fluid supplied to both the fluid motor of the steering gear and the automatic transmission. None of the references teach or suggest a filter that filters hydraulic fluid supplied to both a fluid motor of a steering gear and an automatic transmission. Therefore, allowance of claim 20 is respectfully requested.

New claim 22 recites an apparatus comprising a hydraulic fluid operated automatic transmission for transmitting motive power from an engine of a vehicle to drive wheels of the vehicle. The apparatus also comprises a hydraulic fluid power assisted steering gear for effecting steering movement of steerable wheels of the vehicle. The steering gear includes a fluid motor. A body of hydraulic fluid is provided for

operating both of the automatic transmission and the steering gear. A reservoir stores a portion of the hydraulic fluid. A transmission fluid pump is connected with the reservoir for pumping hydraulic fluid between the reservoir and the automatic transmission at a relatively low pressure. A power steering pump is connected in series with the transmission fluid pump for receiving hydraulic fluid from the transmission fluid pump and for pumping hydraulic fluid to the fluid motor at a relatively high pressure. A cooler cools the hydraulic fluid. The transmission fluid pump is operative to pump hydraulic fluid between the reservoir and the cooler.

New claim 22 patentably defines over a combination of Borman, Luibrand, Bullard et al., and Yamaguchi for at least the following reasons:

1. None of the references teaches or suggests a power steering pump connected in series with a transmission fluid pump for receiving hydraulic fluid from the transmission fluid pump and for pumping hydraulic fluid to a fluid motor of a steering gear at a relatively high pressure. In rejecting previous claim 10, the Office Action states that it would be obvious for one of ordinary skill in the art to modify Borman to include both a power steering pump and a transmission fluid pump, and that placing the transmission fluid pump in line between a reservoir and the power steering pump is merely rearranging parts. Firstly, as set forth above with regard to claim 15, one of ordinary skill in the art would not modify Borman to include both a power steering pump and a transmission fluid pump. Secondly, connecting a power

steering pump in series with a transmission fluid pump includes more than mere rearranging of parts. The fluid system between transmission pump and the automatic transmission must be modified to place the power steering pump in series with the transmission fluid pump, while maintaining fluid flow from the transmission fluid pump to the automatic transmission. Additionally, the power steering pump must be adapted for receiving pressurized fluid and boosting the pressure of the fluid. The power steering pump no longer draws fluid from an unpressurized reservoir. Since none of the references teaches or suggests a power steering pump connected in series with a transmission fluid pump, allowance of claim 22 is respectfully requested.

2. None of the references teaches or suggests a cooler for cooling hydraulic fluid that is used for operating both an automatic transmission and a power steering motor. The Office Action relies upon the heat exchanger 90 of Bullard et al. for a teaching of a cooler. However, the heat exchanger 90 of Bullard et al. fails to cool hydraulic fluid that is used to operate both an automatic transmission and a power steering motor. The heat exchanger 90 of Bullard et al. only cools hydraulic fluid used for an automatic transmission. None of the references teaches or suggest a cooler for cooling hydraulic fluid that is used for operating both an automatic transmission and a power steering motor. Thus, for this additional reason, allowance of claim 22 is respectfully requested.

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No
Connection
In series of
Pumps

Cooper

Claims 23-25 depend from claim 22 and are allowable for at least the same reasons as claim 22. Additionally, claims 23-25 are allowable for the specific limitations of each claim.

Specifically, claim 23 recites a filter for filtering hydraulic fluid. The filter filters the hydraulic fluid supplied to both the fluid motor of the steering gear and the automatic transmission. None of the references teach or suggest a filter that filters hydraulic fluid supplied to both a fluid motor of a steering gear and an automatic transmission. Therefore, allowance of claim 23 is respectfully requested.


Claim 25 recites a first output line that is connected to the transmission fluid pump and directs hydraulic fluid to the automatic transmission and a second output line is connected to the transmission fluid pump and directs hydraulic fluid to the power steering pump. None of the references teaches or suggests the features of claim 25. Therefore, allowance of claim 25 is respectfully requested.

In view of the foregoing, it is respectfully submitted that the above-identified patent application is in condition for allowance, and allowance of the above-identified patent application is respectfully requested.

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Please charge any deficiency or credit any overpayment in
the fees for this amendment to our Deposit Account
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Respectfully submitted,


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